

Amendments of the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims

1. (Previously Presented) A fastener for releasably securing a first element to a second element in a spaced- apart relationship, the fastener comprising:
 - (a) a locking pin moveable between a locked position in which the first element is secured in spaced relationship to the second element and a release position in which the first element is released from the spaced relationship with the second element, the locking pin having an engageable head;
 - (b) means for engaging the head of the locking pin with the second element;
 - (c) bias means ~~urging the locking pin to the release position~~ influencing said second element away from said first element; and
 - (d) an actuator comprising or including shape memory alloy adapted to elongate upon application of appropriate energy;wherein the actuator is adapted, when elongated, to cause the locking pin to move to the release position.
2. (Currently Amended) The fastener of claim 1, which also ~~comprising~~ comprises an integrated processor, a switch and one or more sensors.
3. (Original) The fastener of claim 2, in which the sensor is adapted to sense whether the locking pin is in the locked position or the release position.
4. (Previously Presented) The fastener of claim 3, in which the sensor ~~includes micro-switches~~ is adapted to be activated by the locking pin or an extension of the locking pin.
5. (Previously Presented) The fastener of ~~any one of claims 1 to 4~~ claim 1, wherein the locking pin is made of polymeric material.

6. (Previously Presented) The fastener of ~~any one of claims 1 to 5~~ claim 1, wherein the locking pin has an internal cavity adapted to receive a guide pin.
7. (Previously Presented) The fastener of ~~any one of claims 1 to 6~~ claim 1, wherein the means for engaging the head of the locking pin with the second element comprises a clip.
8. (Original) The fastener of claim 7, wherein the clip is annular.
9. (Previously Presented) The fastener of claim 7 ~~or 8~~, wherein the clip is in two or more parts.
10. (Previously Presented) The fastener any of ~~claims 7 to 9~~ claim 7, wherein the clip is made of elastic material.
11. (Previously Presented) The fastener of ~~any one of claims 1 to 10~~, wherein the locking pin is adapted to be held in the locked position by engagement of the head of the locking pin by the engagement means has a shaft of narrower cross-section than the head of said locking pin.
12. (Currently Amended) The fastener of claim 11, wherein the locking pin is adapted to move to the release position after ~~disengagement of the head of the locking pin from the engagement means~~ the engagement means has disengaged the head of said locking pin.
13. (Previously Presented) The fastener of ~~any one of claims 1 to 12~~ claim 1 when assembled onto the first element.
14. (Previously Presented) The fastener of ~~any one of claims 1 to 13~~, wherein the bias means ~~urging the locking pin to the release position~~ influencing said second element away from said first element is a coiled spring.
15. (Previously Presented) The fastener of ~~any one of claims 1 to 14~~, wherein the actuator is a single coiled spring made of shape memory alloy.
16. (Original) The fastener of claim 15, wherein the actuator is adapted to elongate by energy provided from an energy source.

17. (Original) The fastener of claim 16, wherein there is a cable connection between the energy source and the actuator.
18. (Original) The fastener of claim 16, wherein the energy is in the form of infra red light or ultrasound.
19. (Previously Presented) The fastener of ~~any one of~~ claims 1 ~~to 18~~, wherein the locking pin is adapted to default to the locked position.
20. (Previously Presented) The fastener of ~~any one of~~ claims 1 ~~to 19~~, which comprises a second actuator.
21. (Previously Presented) The fastener of claim 20, wherein the second actuator comprises ~~or includes~~ shape memory alloy adapted to elongate upon application of appropriate energy to cause the locking pin to move to the locked position.
22. (Previously Presented) The fastener of ~~any one of~~ claims 1 ~~to 21~~, which comprises ~~includes~~ a detent adapted to hold the locking pin in the locked and/or release position.
23. (Original) The fastener of claim 22, wherein the detent is adapted to clip into a groove in the locking pin when the locking pin is in the release position, the engagement between the detent and the groove being adapted to prevent the locking pin moving towards the locked position without positive actuation.
24. (Previously Presented) The fastener of ~~any one of~~ claims 1 ~~to 19~~, wherein the locking pin is adapted to move from the locked position to the release position irreversibly.
25. (Previously Presented) The fastener of ~~any one of~~ claims 1 ~~to 19~~, wherein the actuator is adapted to cause the locking pin to move to the locked position when no longer elongated.
26. (Previously Presented) The fastener of ~~any one of~~ claims 1 ~~to 19~~, which also comprises means to communicate with at least one slave fastener.

27. (Original) The fastener of claim 26, wherein the communication means is adapted to communicate with the slave fastener when the locking pin has been caused to move to the release position.
28. (Previously Presented) The fastener of ~~any one of~~ claims 1 ~~to 27~~, wherein the fastener has an address.
29. (Original) The fastener of claim 28, wherein the address is encrypted.
30. (Previously Presented) The fastener of ~~any one of~~ claims 1 ~~to 29~~, wherein the fastener includes means for enabling the fastener to recognize an authorised operator.
31. (Withdrawn--Currently Amended) The fastener of ~~any one of~~ claims 1 ~~to 30~~, wherein the ~~locked~~ locking pin is adapted to be moved to the release position manually.
32. (Currently Amended) A fastener assembly for releasably securing an element, the element comprising a post or pin having a groove, the assembly ~~including~~ comprising a bar adapted to engage the groove to secure the element, the assembly also ~~including~~ comprising a connecting ~~means means attached to the bar and consisting~~ having first and second ends, the first end being attached to an end of the bar and the second end being attached to an anchor point, the connecting means comprising of shape memory material which, upon application of suitable energy, is adapted to change shape and draw the bar out of engagement with the groove, thus releasing the element, wherein the assembly also comprises a brace for the connecting means positioned between the first and second ends of the connecting means.
33. (Original) The fastener assembly of claim 32, wherein the element has more than one post or pin, each having a groove.
34. (Original) The fastener assembly of claim 33, wherein the bar is adapted to engage the groove in more than one post or pin.
35. (Original) The fastener assembly of claim 34, wherein the bar engages the groove in each of two posts or pins.

36. (Previously Presented) The fastener of ~~any one of~~ claims 32 ~~to 35~~, wherein the connecting means is a shape memory wire.
37. (Original) The fastener assembly of claim 36, wherein the shape memory wire is a titanium- nickel wire.
38. (Previously Presented) The fastener of ~~any one of~~ claims 36 ~~or 37~~, wherein ~~the connecting means is attached to each said anchor point~~ is the other end of the bar and said connecting means is adapted to change shape by shrinking to draw the bar out of engagement with the groove.
39. (Previously Presented) The fastener of ~~any one of~~ claims 32 ~~to 38~~, wherein the bar is biased into engagement with the groove.
40. (Cancelled) ~~A fastener assembly substantially as herein described with reference to Figures 12 to 15 or 16 to 18 of the accompanying drawings.~~
41. (Withdrawn) A fastener for releasably securing an airbag between a base and a cover, the fastener ~~including~~ comprising:
- (a) a locking pin moveable between a locked position in which the base is secured in spaced relationship to the cover and a release position in which the base is released ~~from~~ from the spaced relationship with the cover, the locking pin having an engageable head;
 - (b) means for engaging the head of the locking pin with the cover;
 - (c) bias means urging ~~the locking pin to the release position~~ cover away from the base; and
 - (d) an actuator comprising ~~or including~~ shape memory alloy adapted to elongate upon application of appropriate energy,
- wherein the actuator is adapted, when elongated, to cause the locking pin to move to the release position.
42. (Withdrawn) The fastener of claim 41, which also comprises an integrated processor, a switch and one or more sensors.

43. (Withdrawn) The fastener of claim 42, in which the sensor is adapted to sense whether the locking pin is in the locked position or the release position.
44. (Withdrawn) The fastener of claim 43, in which the sensor includes micro switches adapted to be activated by the locking pin or an extension of the locking pin.
45. (Withdrawn) The fastener of claim 41 which also comprises a sensor adapted to sense and report the presence or absence of the airbag.
46. (Withdrawn) The fastener of ~~any one of claims 41 to 45~~, wherein the locking pin is made of polymeric material.
47. (Withdrawn) The fastener of ~~any one of claims 41 to 46~~, wherein the locking pin has an internal cavity adapted to receive a guide pin.
48. (Withdrawn) The fastener of ~~any one of claims 41 to 47~~, wherein the means for engaging the head of the locking pin with the cover comprises a clip.
49. (Withdrawn) The fastener of claim 48, wherein the clip is annular.
50. (Withdrawn) The fastener of claim 48 ~~or 49~~, wherein the clip is in two or more parts.
51. (Withdrawn) The fastener of ~~any one of claims 48 to 50~~, wherein the clip is made of elastic material.
52. (Withdrawn) The fastener of ~~any one of claims 41 to 51~~, wherein the locking pin ~~is adapted to be held in the locked position by engagement of the head of the locking pin by the engagement means~~ has a shaft of narrower cross-section than that of the head of the locking pin.
53. (Withdrawn) The fastener of claim 52, wherein the locking pin is adapted to move to the release position after ~~disengagement of the engagement means~~ has disengaged the head of the locking pin from the engagement means and has moved towards the shaft.
54. (Withdrawn) The fastener of ~~any one of claims 41 to 45~~ when assembled onto the base.

55. (Withdrawn) The fastener of ~~any one of claims 41 to 54~~, wherein the bias means urging the locking pin to the release position influences the cover away from the base is a coiled spring.
56. (Withdrawn) The fastener of ~~any one of claims 41 to 55~~, wherein the actuator is a single coiled spring made of shape memory alloy.
57. (Withdrawn) The fastener of claim 56, wherein the actuator is adapted to elongate by energy provided from an energy source.
58. (Withdrawn) The fastener of claim 57, wherein there is a cable connection between the energy source and the actuator.
59. (Withdrawn) The fastener of claim 57, wherein the energy is in the form of infra red light or ultrasound.
60. (Withdrawn) The fastener of claim 57, wherein the energy source is a vehicle battery.
61. (Withdrawn) The fastener of ~~any one of claims 41 to 60~~, wherein the locking pin is adapted to default to the locked position.
62. (Withdrawn) The fastener of ~~any one of claims 41 to 61~~, which ~~includes~~ comprises a second actuator.
63. (Withdrawn) The fastener of claim 62, wherein the second actuator comprises ~~or includes~~ shape memory alloy adapted to elongate upon application of appropriate energy to cause the locking pin to move to the locked position.
64. (Withdrawn) The fastener of ~~any one of claims 41 to 63~~, which comprises a detent adapted to hold the locking pin in the locked and/or release position.
65. (Withdrawn) The fastener of claim 64, wherein the detent is adapted to clip into a groove in the locking pin when the locking pin is in the release position, the engagement between the detent and the groove being adapted to prevent the locking pin moving towards the locked position without positive actuation.
66. (Withdrawn) The fastener of ~~any one of claims 41 to 60~~, wherein the locking pin is adapted to move from the locked position to the release position irreversibly.

67. (Withdrawn) The fastener of ~~any one of claims 41 to 60~~, wherein the actuator is adapted to cause the locking pin to move to the locked position when no longer elongated.
68. (Withdrawn) The fastener of ~~any one of claims 41 to 67~~, which also comprises ~~includes~~ means to communicate with at least one slave fastener.
69. (Withdrawn) The fastener of claim 68, wherein the communication means is adapted to communicate with the slave fastener when the locking pin has been caused to move to the release position.
70. (Withdrawn) The fastener of ~~any one of claims 41 to 69~~, wherein the fastener has an address.
71. (Withdrawn) The fastener of claim 70, wherein the address is encrypted.
72. (Withdrawn) The fastener of ~~any one of claims 41 to 71~~, wherein the fastener includes means for enabling the fastener to recognise an authorised operator.
73. (Withdrawn) The fastener of ~~any one of claims 41 to 72~~, wherein the locked pin is adapted to be moved to the release position manually.
74. (Cancelled) ~~A fastener substantially as herein described with reference to Figures 1 to 3 or 4 or 5 to 9 or 10 to 11 of the accompanying drawings.~~
75. (Withdrawn) A method of installing an airbag between a base and a cover, the method comprising the steps of:
- (a) connecting at least one fastener as claimed in any one of claims 41 to 74 to the base;
 - (b) connecting the airbag to the base; and
 - (c) causing the locking pin to move to the locked position to secure the airbag between the base and the cover.
76. (Withdrawn) The method of claim 75 in which steps (a) and (b) are reversed.
77. (Withdrawn) The method of claim 73, which comprises the further step of connecting each fastener to wiring for the airbag.

78. (Withdrawn) The method of claim 75, wherein the airbag wiring is connected to an engine control unit.